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canadian havens from hay fever

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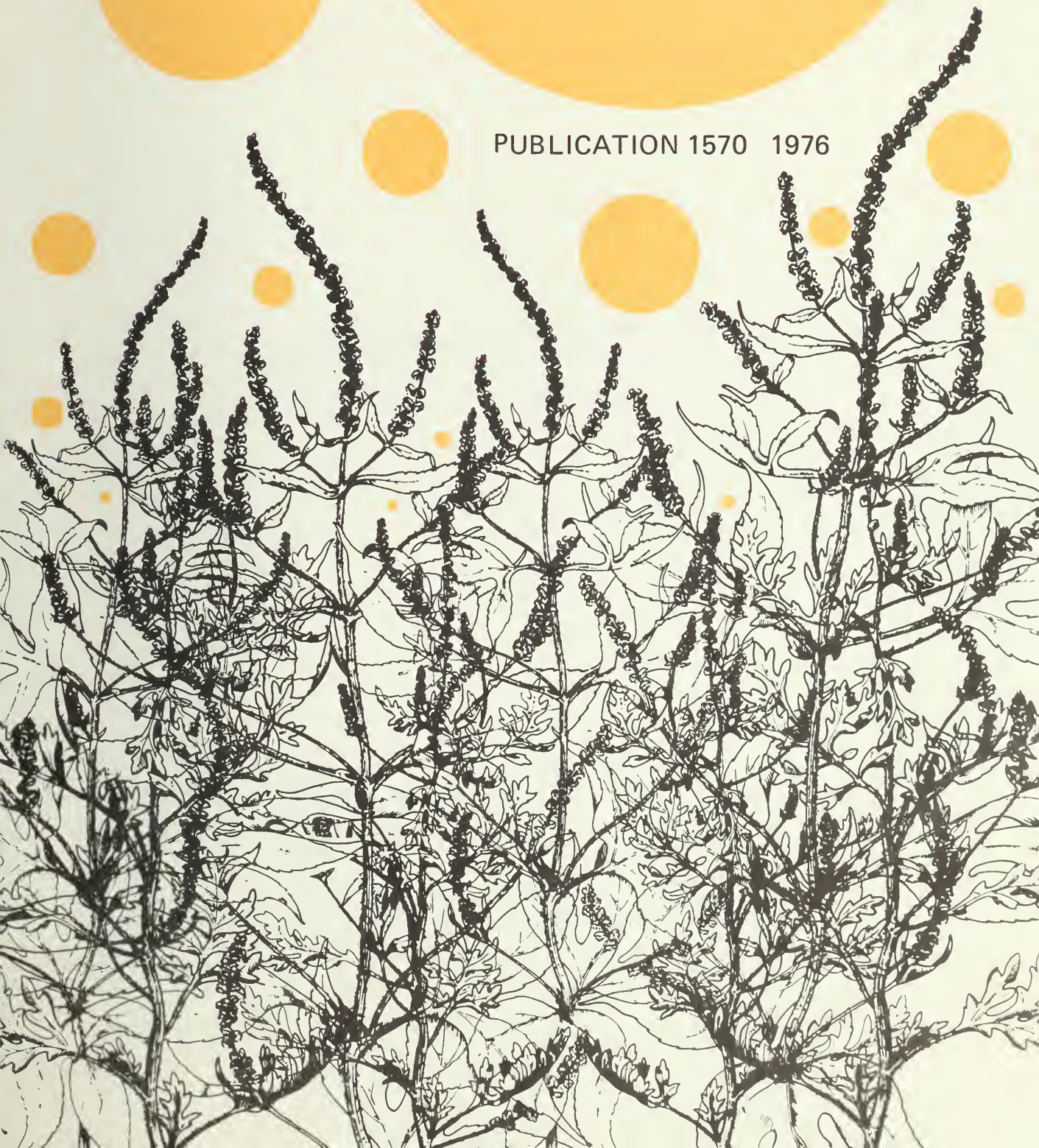

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canadian havens from hay fever

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This publication presents up-to-date information on the incidence in Canada of ragweed pollen, the main cause of hay fever, and is intended to help sufferers plan their Canadian vacations accordingly.

Many holiday areas in Canada are entirely free from the irritant, and others have so low a ragweed pollen air-index that they offer similar relief. In this publication, which is a digest of all available information on ragweed pollen in Canada, we try to answer the questions most often asked on the subject. Information on other types of pollen causing hay fever is also given.

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BIOLOGY OF POLLEN

All flowering plants produce pollen, but not all pollen is important in hay fever. Transportation of pollen from the anthers (the male sexual organs in a plant) to the ovary (the female organ) is brought about by a variety of agents, of which wind and insects are the most significant. Pollen from insect-pollinated plants is usually larger, stickier, and less buoyant than pollen of wind-pollinated plants and it rarely causes hay fever. Most of the plants with showy flowers are insect-pollinated. Some of these plants bloom during the fall hay fever season, and their pollen is often falsely accused of being the causative agent. Pollen of some insect-pollinated plants, such as the goldenrods, can indeed produce hay fever symptoms, but normally the heavy sticky pollen is carried by insects or it drops to the ground close to the plants.

The pollen of wind-pollinated plants is the cause of most of the hay fever. Not all wind-pollinated plants, however, have toxic pollen. The pollen of spruce, for example, although produced in enormous quantities, has not been shown to be responsible for causing hay fever. In order to be of importance in hay fever, plants must be widely distributed and abundant. They must also produce large quantities of airborne toxic pollen. This combination of characters is present in only a comparatively few plants including certain weeds: ragweeds, Russian thistle, summer-cypress, wormwoods, pigweeds, and plantains; some grasses, such as timothy, Kentucky blue grass, and orchard grass; and a few trees: alders, poplars, oaks, ashes, birches, beech, elms, and maples. Pollen from any of these plants and a number of others may produce the usual distressing symptoms, but the pollen from ragweed, because of its specific toxic qualities and abundance, is the bane of the greatest number of sufferers.

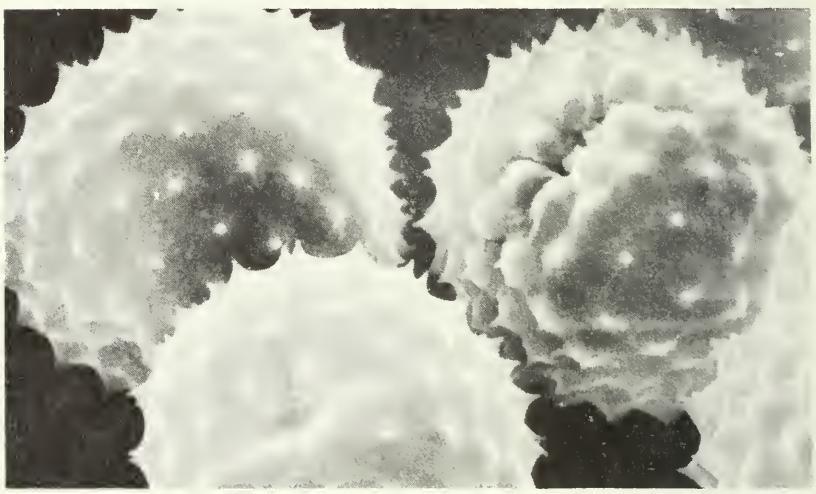
KINDS OF RAGWEED

Ragweeds are coarse, weedy-looking herbs, with greenish, inconspicuous, wind-pollinated flowers grouped in heads. The pollen-producing flowers are in spikes terminating the stem and branches. The female flowers are borne in groups of one to three, below the male spikes, at the base of the upper leaves, and close to the stems. Ragweeds are native to North America. With the clearing of land and intensification of agriculture, they have spread to become serious pests, particularly in the eastern regions.

Three species of ragweed occur in Canada.

The common or short ragweed, *Ambrosia artemisiifolia* L., is a grayish green annual, 15 cm to 1.5 m (6 in. to 5 ft) in height, with bushy branches and finely divided leaves (Figure 1). This species is by far the most abundant of the ragweeds, and its pollen is the most important cause of hay fever in eastern North America. The plant is found under a wide variety of soil and moisture conditions in cultivated fields, vacant lots, waste places, roadsides, and fence rows. It occurs in every province of Canada.

Pollen of the common ragweed, *Ambrosia artemisiifolia* L. About 1300 times natural size.



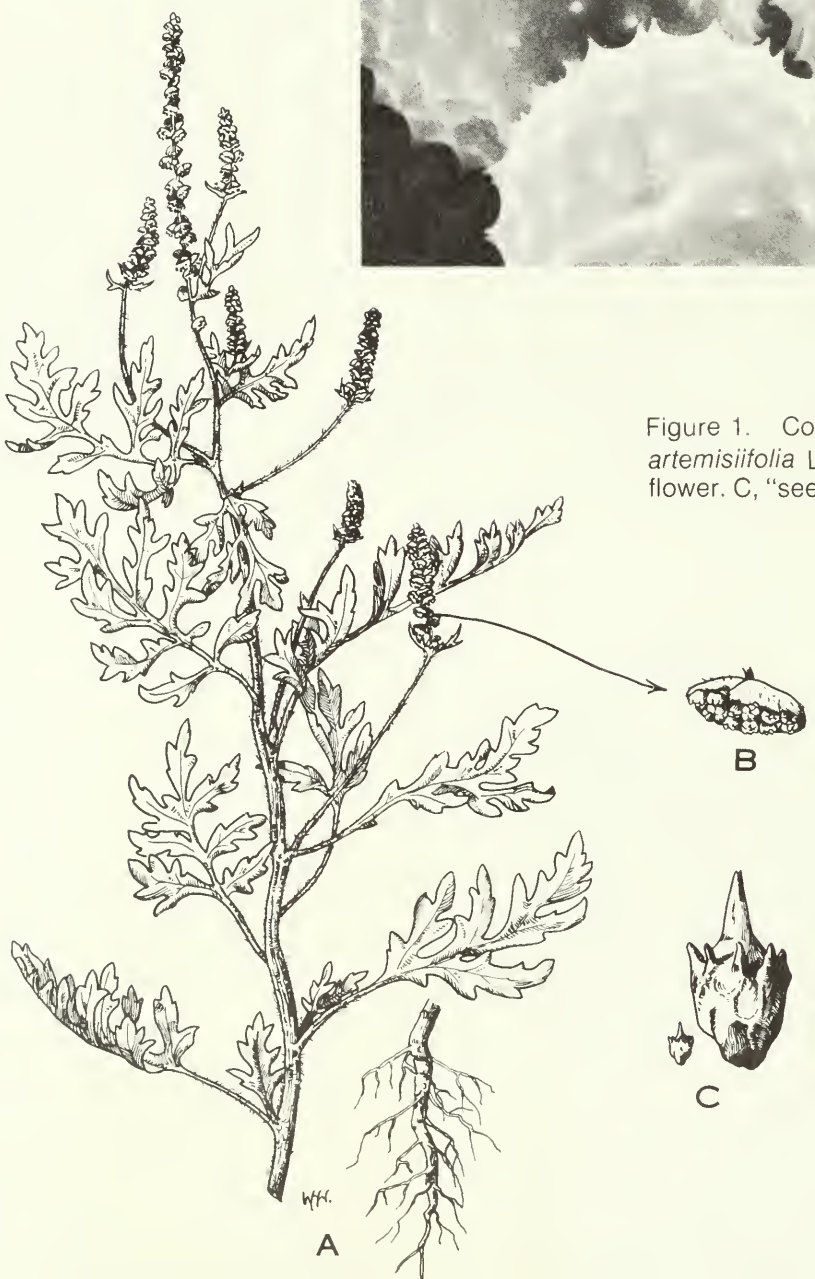


Figure 1. Common ragweed, *Ambrosia artemisiifolia* L. A, plant. B, head of male flower. C, "seed."

The giant or great ragweed, also called kinghead, *Ambrosia trifida* L., is a robust annual, 45 cm to 2.7 m (1½ to 9 ft) in height, with fewer and larger leaves than the common ragweed. The leaves are rough, and usually have three coarse lobes (Figure 2). This plant is found along roadsides, in agricultural fields, and in waste places near towns. It is sometimes found in undisturbed habitats such as in marshes that dry out in summer and on rich moist soil near streams. It reaches its greatest size under these conditions. Although it is much less abundant than common ragweed in the east and of much less importance as a hay fever plant, it is the most frequently occurring ragweed in southern Manitoba.

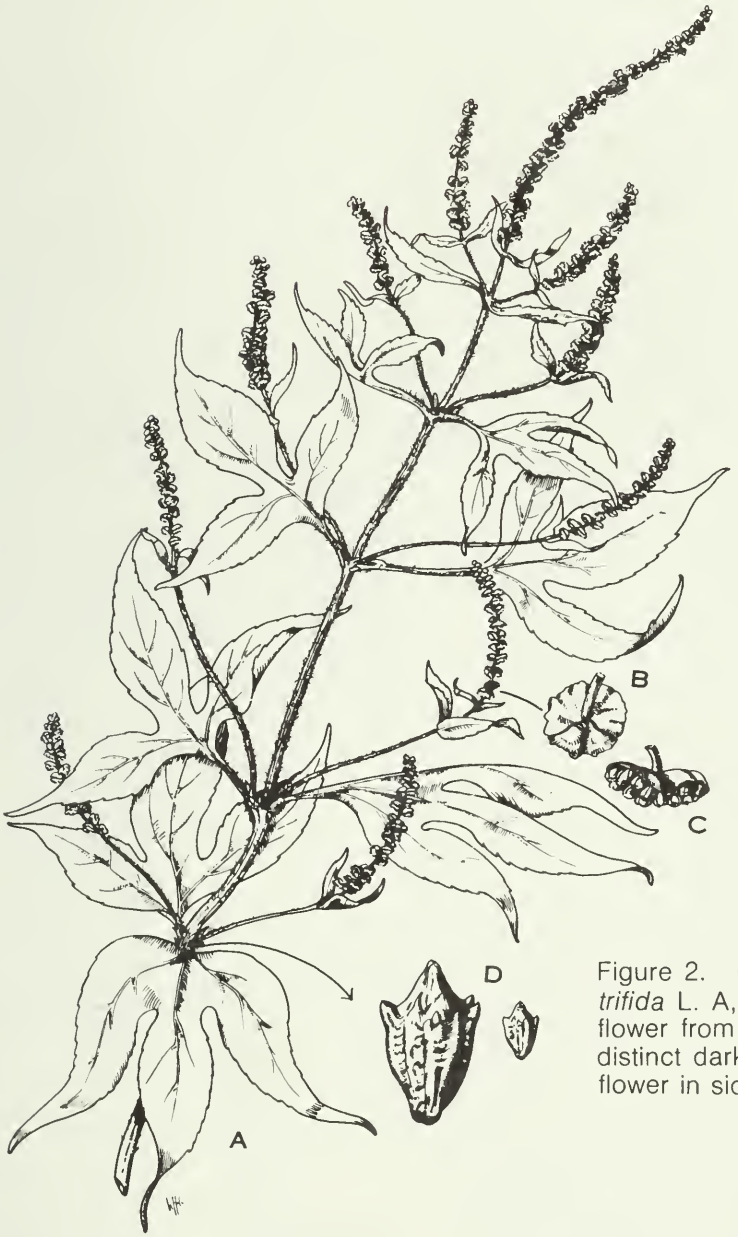


Figure 2. Giant ragweed, *Ambrosia trifida* L. A, plant. B, head of male flower from above showing three distinct dark lines. C, head of male flower in side view. D, "seed."

The perennial or western ragweed, *Ambrosia psilostachya* DC., has a perennial creeping root system (Figure 3). It resembles the common ragweed, although it is usually a smaller plant with hairier and less finely lobed leaves. Western habitats include native prairie, pastures, and roadsides, generally on dry sandy soils. In the east, this plant is also found on sandy soils in pastures and on roadsides but more often along railroads and adjacent railway installations. In recent years, perennial ragweed, the least common of the three species, has often been noticed in Ontario and Quebec.

Figure 3. Perennial or western ragweed, *Ambrosia psilostachya* DC. This plant is the least common of the three species. It resembles the common ragweed in general appearance.

DISTRIBUTION OF POLLEN CAUSING HAY FEVER *

ATLANTIC PROVINCES

Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland are fortunate in having comparatively little ragweed. Ragweeds do occur and are widespread, but stands are fairly extensive only in the Annapolis Valley and a few other areas. Even in these areas the pest is not nearly so troublesome as it is in southern Ontario and Quebec, where ragweed is a serious agricultural weed.

From the pollen sampling carried out in the Atlantic Provinces, only a few high air-indexes have been found. The scarcity of ragweed and the low indexes at St. John's, Gander, and Corner Brook are convincing evidence that Newfoundland is a haven from hay fever.

The control and survey campaigns being carried out in Nova Scotia, Prince Edward Island, and New Brunswick have had a great deal of success. Ragweed is under control and if efforts continue it may eventually be eradicated.

Other plants that produce enough pollen to cause hay fever are alders and birches in May and June and grasses in late June and July.

QUEBEC

In Quebec, the Gaspé Peninsula is the most satisfactory and accessible area that is free from ragweed pollen. Since 1936, the Quebec Department of Agriculture and Colonization has been carrying out a ragweed eradication campaign in the Gaspé Peninsula, and the small amounts of ragweed originally present have been further reduced. The Lake St. Jean district and the large northern counties of Temiscamingue and Abitibi, including the mining towns of Noranda, Rouyn, and Val d'Or, are refuges from ragweed. Several localities in the Laurentian area north of Montreal also have very little ragweed.

* For additional information on past surveys of pollen counts in specific areas see Page 16.

The rich lowlands along the Ottawa and St. Lawrence rivers, bounded on the north by the Laurentians, on the south by the Appalachians of the Eastern Townships, and extending east to Quebec City, are polluted with ragweed and not recommended for hay fever sufferers.

Hay fever seasons in southern Quebec are similar to those mentioned under Ontario.

ONTARIO

Northern Ontario, including the towns of Temagami, Kirkland Lake, Timmins, Cochrane, Kapuskasing, Sudbury, and Sault Ste. Marie, is a safe retreat. Dorset, Rosseau, and some of the other wooded areas in the Muskoka Lakes District are almost as satisfactory. Although the area around Lake Nipissing is not free from ragweed, the air-index at North Bay is low and the area should be safe. Most of southern Ontario, including many of the large cities, is heavily polluted with ragweed.

Hay fever is mainly caused by tree pollens in April and May, grass pollens in June and July, and ragweed pollens in the late summer, especially from the middle of August to the middle of September.

MANITOBA

Riding Mountain National Park and the north of the province are havens for those in search of an escape from ragweed pollen. However, infestations of giant ragweed occur in the rich agricultural districts in the Red River valley. Common ragweed occurs at Winnipeg and other localities in southern Manitoba.

Other plants that contribute to hay fever in Manitoba are trees from the first of May to early June, grasses from June to the end of July, and Russian thistle and sages in August.

SASKATCHEWAN

Ragweed pollen should not cause hay fever symptoms anywhere in the province. However, in the extreme south, bur-ragweed and povertyweed are found in abundance.

The most important sources of hay fever pollen in Saskatchewan are the grasses, Russian thistle, sages, and a few trees such as poplars, elms, Manitoba maple, and birches. Russian thistle is a common weed in agricultural lands and waste places.

ALBERTA

Almost all of the province is safe for people sensitive to ragweed pollen. The possible exception is the southeastern part, where bur-ragweed and other plants related to ragweed are fairly common.

Tree pollens are abundant in the forested areas in May and June; the grasses produce pollen from June to September, but mainly in July; and Russian thistle and sages shed their pollen in July and August.

BRITISH COLUMBIA

For hay fever sufferers, this province is one of the safest areas in Canada. Although all three ragweeds as well as bur-ragweed and false ragweed occur, they are rare plants and their pollen adds little to the airborne total.

Pollen grains from alders, poplars, and birches are prevalent in the early spring in some areas and may cause hay fever. Grass pollen is most abundant in July and August. Pollen from narrow-leaved plantain is common along the coast, and inland in the drier areas pollen from lamb's-quarters and sages is fairly abundant, especially in late summer.

RAGWEED POLLEN AIR-INDEXES

Throughout North America, standard methods and equipment are used for collecting pollen grains. Slides are placed outdoors in a special apparatus each day, in some areas for several months, but usually during August and September, the ragweed pollen season. The ragweed pollen air-index is derived from calculations based on the pollen catches. The index indicates the relative amount of pollen in the air in a particular community, and permits comparison of various localities.

The ragweed pollen air-indexes for Canada are listed in Table 1.

Persons sensitive to ragweed pollen are usually sensitive to pollen of povertyweed, bur-ragweed, false ragweed, and cocklebur. Of this group of weeds, bur-ragweed is the most abundant in Canada. In computing the air-indexes, pollen of these plants that appears on test slides is added to that of the ragweeds. In some areas of Western Canada, these relatives of the ragweeds may be more important than the ragweeds themselves, but in the east they have very little influence on the air-index figures.

TABLE 1. RAGWEED POLLEN AIR-INDEXES FOR CANADA

ANY CITY OR COMMUNITY HAVING AN INDEX
above 10 is not recommended
between 5 and 10 is fairly good
below 5 is good
below 1 is excellent

Map reference number	Province and locality	Period of ragweed pollen survey	Average ragweed pollen air-index
	NEWFOUNDLAND		
1.	St. John's	1950-55	0.3
2.	Corner Brook	1951 & 1955	0.2
	Mount Pearl (near St. John's)	1954	0.1
	Gander	1967	0.1
	NOVA SCOTIA		
3.	Ingonish Island	1950-55	1.4
4.	Cape Breton Highlands National Park (Ingonish Beach)	1950-55	0.9
5.	Baddeck	1951-54	0.4
	Sydney	1967	0.3
6.	Antigonish	1951-55	0.4
7.	Truro	1950-54	0.2
8.	Kentville	1953-55	4.7
9.	Halifax	1954	1.9
10.	Chester	1951-55	0.3
11.	Digby	1951-55	3.2
12.	Meteghan	1951-52	4.5
13.	Yarmouth	1952-56	4.5
14.	Middle West Pubnico	1951	0.3
	Sable Island	1967	0.2
	PRINCE EDWARD ISLAND		
15.	Souris	1952-56	1.0
16.	Montague	1952-56	0.6
17.	Charlottetown	1952-56	1.4
18.	P.E.I. National Park (Dalvay House)	1952-56	3.0
19.	Summerside	1952-56	1.0
20.	Summerside	1952-56	1.8
21.	O'Leary	1952-56	1.4
22.	Tignish	1952-56	1.2
	NEW BRUNSWICK		
23.	Sackville	1952-68	0.4
24.	Pointe au Chene	1952-53	20.0
		1954-68	1.5*
25.	Shediac Cape	1952-54	0.6
26.	Moncton	1952-68	0.2
27.	Fundy National Park	1950-55	5.5
		1959-68	0.3*

* This figure is included to indicate the reduction in the pollen index since the inception of control campaigns in 1954.

Map reference number	Province and locality	Period of ragweed pollen survey	Average ragweed pollen air-index
	(NEW BRUNSWICK—continued)		
28.	Sussex	1952-68	0.4
29.	Chipman	1952-68	0.4
30.	Jemseg	1952-67	2.2
31.	Gagetown	1952-53	19.5
		1954-68	0.7*
32.	Saint John	1952-68	0.3
33.	Welsford	1952-68	0.3
34.	Fredericton	1950-68	0.1
35.	St. George	1952-68	0.3
36.	St. Andrews	1952-68	0.3
37.	St. Stephen	1952-68	0.4
38.	Grand Manan	1956-68	0.3
39.	McAdam	1956-68	0.4
40.	Woodstock	1952-68	0.1
41.	Perth-Andover	1952-68	0.1
42.	Edmundston	1952-68	0.9
43.	Doaktown	1952-68	0.2
44.	Richibucto	1958-68	0.2
45.	Newcastle-Chatham	1952-68	0.1
46.	Tracadie	1956-67	0.7
47.	Bathurst	1954-68	0.1
48.	Dalhousie	1952-68	0.1
49.	Campbellton	1952-68	0.0
	Charlo	1967	0.0
	QUEBEC		
50.	Matapédia	1938	0.1
51.	Carleton	1949-56	0.7
52.	New Carlisle	1938	3.0
53.	Chandler	1938	0.1
54.	Grand Rivière	1949-52	0.2
55.	Percé	1949-56	0.7
56.	Gaspé	1949-56	0.2
57.	Îles de la Madeleine	1941	0.1
58.	Mont-Albert	1939	0.1
59.	Matane	1954-56	2.2
60.	Mont Joli	1938	0.2
61.	Father Point	1934-35	1.0
62.	Rimouski	1949-56	3.0
63.	Rivière-du-Loup	1949-56	4.3
64.	Tadoussac	1966-70	0.3
65.	Jonquière (Chicoutimi)	1953-55	3.0
66.	Normandin	1939-41	3.0
67.	Baie St. Paul	1966-70	12.9
68.	Ste. Anne-de-la-Pocatière	1967	9.5
69.	Charlesbourg	1939-41	2.0
70.	Québec City	1949-55	11.1
71.	Sherbrooke	1951-55	16.4
72.	Lennoxville	1939-41	4.0
73.	Victoriaville	1951-55	29.6
74.	Cap-de-la-Madeleine	1953-55	43.4
75.	Berthierville	1939-41	33.0
	St. Laurent D'Orléans	1967-70	17.2
76.	Mont Orford	1966-71	11.5
77.	Farnham	1939	64.0
78.	Montreal Area:		
	Dorval	1962-67	48.4
	McGill University	1962-63	25.1
	Beaconsfield	1961-67	22.6

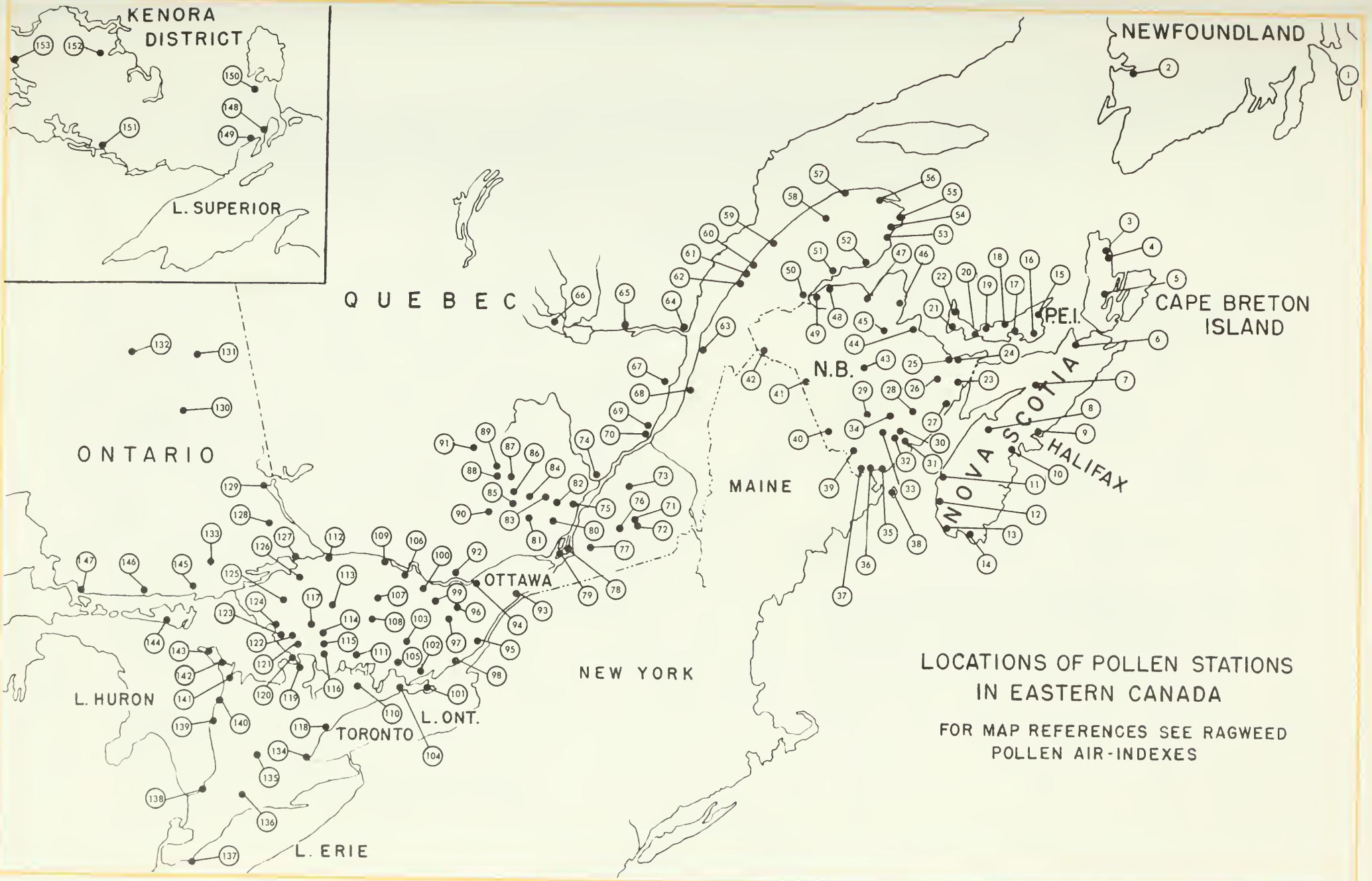
Map reference number	Province and locality	Period of ragweed pollen survey	Average ragweed pollen air-index
	(QUEBEC —continued)		
79.	Ste. Anne de Bellevue	1950-55	37.9
80.	St. Jérôme	1960-71	18.2
81.	Lac des Seize Îles	1949-52	9.1
82.	Mont-Roland	1965	2.1
83.	Ste. Marguerite	1964-65	5.7
84.	Ste. Agathe	1952-65	6.7
85.	St. Adolphe	1964-71	2.3
86.	St. Jovite	1952-64	3.1
	St. Faustin	1967-71	2.9
87.	Mont Tremblant	1952-64	3.5
88.	Labelle	1960-64	3.8
89.	Nominingue	1952-56	6.5
90.	Lac-des-Plages	1956-64	6.2
91.	Mont Laurier	1953-55	5.2
92.	Luskville	1950-51	21.0
	ONTARIO		
93.	Cornwall	1953-54	22.2
94.	Ottawa	1950-74	10.0
95.	St. Lawrence Islands		
	National Park (Mallorytown)	1950-52	33.2
96.	Smiths Falls	1957-59	14.2
97.	Westport (Rideau Lakes)	1957-59	7.6
98.	Kingston	1961-63	29.4
99.	Calabogie	1963-64	9.2
100.	Renfrew	1958-60	4.9
101.	Picton	1956	38.2
102.	Belleville	1956	30.2
103.	Madoc	1957-59	21.4
104.	Presqu'ile Park	1963	18.4
105.	Kasshabog Lake (near Marmora)	1963-64	9.6
106.	Pembroke	1958-60	4.5
107.	Barry's Bay	1957-59	1.1
		1963-64	7.5
108.	Bancroft	1955-57	8.1
109.	Chalk River	1954-56	4.5
110.	Peterborough	1953-54	33.4
111.	Haliburton	1956-58	1.9
		1963-64	3.8
112.	Mattawa	1958-60	1.5
113.	Algonquin Park	1952-55	12.3
		1963	1.5
114.	Dorset	1952-54	6.1
115.	Muskoka Falls	1955-57	4.6
116.	Gravenhurst	1955-57	16.8
117.	Huntsville	1953-56	9.4
118.	Toronto Area:		
	Core of Central Zone	1957-67	35.6
	Southwest Metro	1965-67	33.6
	Metro-Central	1957-67	42.5
	East Metro	1957-67	44.6
	Northwest Metro	1957-67	54.0
119.	Midland	1954	11.5
120.	Georgian Bay Islands		
	National Park (Beausoleil Island)	1950-53	14.8
121.	Port Carling	1955-57	9.6
122.	Rosseau	1957-59	3.7
123.	Lake Joseph (Muskoka)	1951	4.0
124.	Parry Sound	1955-56	19.4

Map reference number	Province and locality	Period of ragweed pollen survey	Average ragweed pollen air-index
	(ONTARIO —continued)		
125.	Magnetawan	1957-59	3.5
		1963-64	6.0
126.	South River	1957-59	1.8
127.	North Bay	1951-53	7.5
128.	Temagami	1954-55	2.4
129.	New Liskeard	1956-57	0.3
130.	Timmins	1958-59	0.2
131.	Cochrane	1934-35	2.0
132.	Kapuskasing	1951-52	0.4
133.	Sudbury	1954-55	3.4
134.	Hamilton	1961-68	17.2
135.	Guelph	1963-64	30.5
136.	London	1953-54	38.5
137.	Point Pelee National Park	1950-52	38.5
138.	Port Franks	1964	37.5
139.	Kincardine	1958-60	22.4
140.	Wiarton	1958-60	16.9
141.	Inverhuron Park	1964	27.4
142.	Lion's Head	1958-60	18.3
		1963-64	11.4
143.	Tobermory	1956-58	5.2
144.	Mindemoya (Manitoulin Island)	1952-55	7.7
145.	Espanola	1956-59	3.9
146.	Blind River	1956-57	2.5
147.	Sault Ste. Marie	1952-54	6.2
148.	Thunder Bay	1957-59	0.9
149.	10 miles S. W. of Thunder Bay	1956	0.1
150.	Black Sturgeon Lake (Thunder Bay District)	1952	2.3
151.	Fort Frances	1956-57	1.0
152.	Cedar Lake (Kenora District)	1952-54	3.4
153.	Kenora	1956-58	6.2
	MANITOBA		
154.	Winnipeg	1947-54	7.0
		1960-62	4.1
155.	Steinbach	1960-62	2.1
156.	Morris	1960-62	18.6
157.	Emerson	1960-61	4.7
158.	Morden	1940	12.0
		1960-62	3.6
159.	Mather	1960-61	2.3
160.	Pierson	1940	6.0
		1960-62	3.5
161.	Brandon	1961-62	5.0
162.	Portage la Prairie	1960-62	1.5
163.	Russell	1940	1.0
164.	Riding Mountain National Park	1950	0.2
165.	Dauphin	1940	5.0
166.	The Pas	1940	0.1
	SASKATCHEWAN		
167.	Carlyle	1960-62	1.6
168.	Estevan	1960-62	2.5
169.	Weyburn	1960-62	2.9
170.	Regina	1955	0.3
171.	Melfort	1955	0.1
172.	Saskatoon	1951-53	0.3
173.	Prince Albert	1930	0.1

Map reference number	Province and locality	Period of ragweed pollen survey	Average ragweed pollen air-index
	(SASKATCHEWAN—continued)		
174.	Prince Albert National Park (Waskesiu)	1951	0.0
175.	Swift Current	1952-53	1.3
176.	Scott	1955	0.1
	Maple Creek	1968	0.0
	Govenlock	1968	0.0
	ALBERTA		
177.	Cypress Hills	1952	0.0
178.	Manyberries	1950-51	0.1
179.	Medicine Hat	1950-51	7.0
180.	Vermilion	1950-51	0.0
181.	Lethbridge	1950-51	1.0
182.	Drumheller	1950-51	1.0
183.	Edmonton	1950-51	0.0
184.	Waterton Lakes National Park	1952	0.0
185.	Coleman	1950-51	0.0
186.	Calgary	1950-51	0.0
187.	Banff (Banff National Park)	1950-51	0.0
188.	Lake Louise (Banff National Park)	1950-51	0.0
189.	Jasper (Jasper National Park)	1952	0.0
190.	Beaverlodge	1950-51	0.0
	Mt. Eisenhower	1968	0.0
	Vegreville	1968	0.0
	BRITISH COLUMBIA		
191.	Cranbrook	1965	0.0
192.	Field (Yoho National Park)	1965	0.0
193.	Glacier (Glacier National Park)	1965	0.0
194.	Crescent Valley	1965	0.1
195.	Creston	1965	0.1
196.	Grand Forks	1965	0.1
197.	Summerland	1950	0.0
		1965	0.0
198.	Vernon	1965	0.0
199.	Kamloops	1965	0.0
200.	Hope	1965	0.0
201.	Williams Lake	1965	0.0
202.	Prince George	1965	0.0
203.	Vancouver	1965	0.0
204.	Saanichton	1953-54	0.0
		1965	0.1
205.	Victoria	1958	0.8
206.	Parksville	1965	0.1
207.	Comox	1965	0.0
	Queen Charlotte City	1965	0.3

CONTROL OF RAGWEED

To protect the areas where persons susceptible to ragweed pollen may find relief, and to develop other retreats, the ragweed plant must be controlled. Any community that wishes to carry out a control campaign should consult its provincial department of agriculture for advice on the proper use of herbicides.


KENORA DISTRICT
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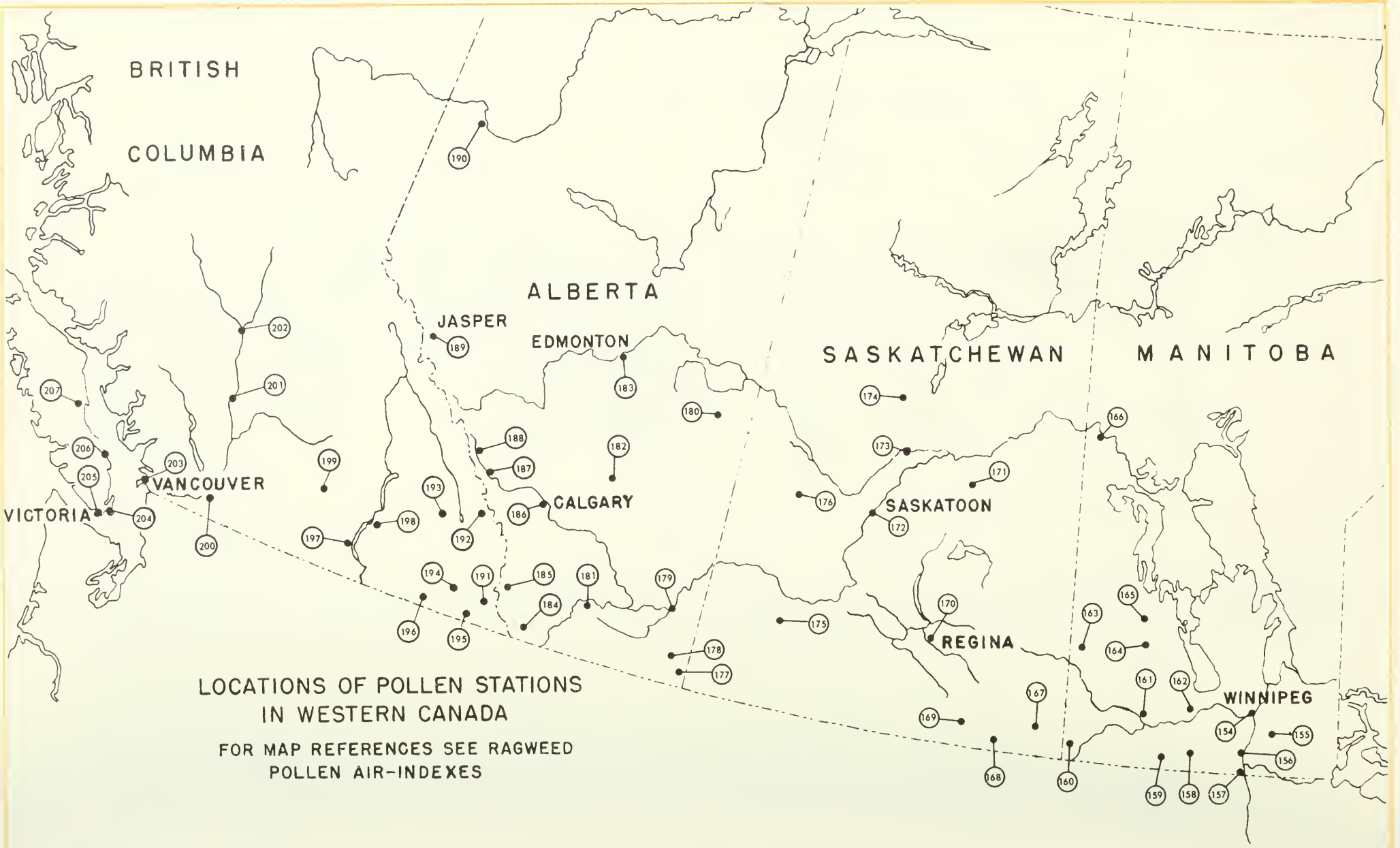
LOCATIONS OF POLLEN STATIONS IN EASTERN CANADA
FOR MAP REFERENCES SEE RAGWEED POLLEN AIR-INDEXES



LOCATIONS OF POLLEN STATIONS
IN WESTERN CANADA

FOR MAP REFERENCES SEE RAGWEED
POLLEN AIR-INDEXES

COMMON AND SCIENTIFIC NAMES OF PLANTS

COMMON NAME	*SCIENTIFIC NAME*
alders	*Alnus* spp.
ashes	*Fraxinus* spp.
beech	*Fagus grandifolia* Ehrh.
birches	*Betula* spp.
bur-ragweed	*Ambrosia acanthicarpa* Hook.
cocklebur	*Xanthium strumarium* L.
elms	*Ulmus* spp.
grass, Kentucky blue	*Poa pratensis* L.
grass, orchard	*Dactylis glomerata* L.
grasses	Gramineae
lamb's-quarters	*Chenopodium album* L.
maple, Manitoba	*Acer negundo* L.
maples	*Acer* spp.
oaks	*Quercus* spp.
pigweeds	*Amaranthus* spp.
plantain, narrow-leaved	*Plantago lanceolata* L.
plantains	*Plantago* spp.
poplars	*Populus* spp.
povertyweed	*Iva axillaris* Pursh
ragweed, false	*Iva xanthifolia* Nutt.
sages	*Artemisia* spp.
summer-cypress	*Kochia scoparia* (L.) Schrader
thistle, Russian	*Salsola pestifer* A. Nels.
timothy	*Phleum pratense* L.
wormwoods	*Artemisia* spp.

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